CHAPTER I

INTRODUCTION

1.1 Background of The Study

Internal combustion engine is a device converting the energy of a fuel-air mixture burning within a combustion chamber into mechanical energy. The engine consists of cylinder in different phases of the engine cycle (intake, compression, expansion and exhaust). Each cylinder has an inlet and exhaust valves, opening and closing of which is controlled by the cam mechanism. The intake stroke of the piston descends from the top of the cylinder to the bottom of the cylinder for reducing the pressure inside the cylinder.

A mixture of fuel and air, or just air in a diesel engine, is forced by atmospheric (or greater) pressure into the cylinder through the intake port than the intake valves is closed. The volume of air/fuel mixture that is drawn into the cylinder compared to the volume of the cylinder is called the volumetric efficiency of the engine.

Basically the previous system on automobile combustion is complex. To generate maximum power at low RPM is required a different setting than if we want to generate maximum power at high RPM. This is because the properties of the mixture of air and fuel during combustion. How big the valve should be opened, how long the valve should be opened, when the valve should be opened all different. The engine setting

for low RPM will reduce the engine's power and torque while run in high RPM. Otherwise the engine setting for high RPM will cause poor engine performance while run in low RPM.

i-VTEC (Intelligent-Variable Valve Timing and Lift Electronic Control) is a valve train system developed by Honda to improve the volumetric efficiency of a four-stroke internal combustion engine. The i-VTEC system uses two camshaft profiles and electronically selects between the profiles.

The engine test will analyse the effect of i-VTEC technology on Honda CR-V to the engine performance and fuel consumption. The result of this engine test will give us extra lessons whether this device is efficient or not.

1.2 Objectives of the Study

According to the problems statements that have been explained before, the objective of this study for analysing engine performance is:

a. To compare the power on active i-VTEC and non-active i-VTEC system.
b. To compare the torque, on active i-VTEC and non-active i-VTEC system.

1.3 Benefit of The study

Two benefits of this project study are as follows:

a. Theoretical Benefit

The study is expected to give extra lessons to know about the engine Performance of I-VTEC Technology on Honda CR-V.

b. Practical Benefit

The study is expected to learn more the knowledge of researcher and reader about principles mechanisms of I-VTEC Technology.

1.4 Problem Limitations

Problem limitation on the engine test is used In-Line 4 Cylinder 16 Valve DOHC i-VTEC of HONDA CR-V 2.4L. The fuel which is used in the experiment is gasoline with the number octane of 92. The research will discuss about torque and power on engine use i-VTEC. The tools which available and also for issues to be discussed or analysed is not too widespread. The dynamometer used to measure the power and torque from the engine.